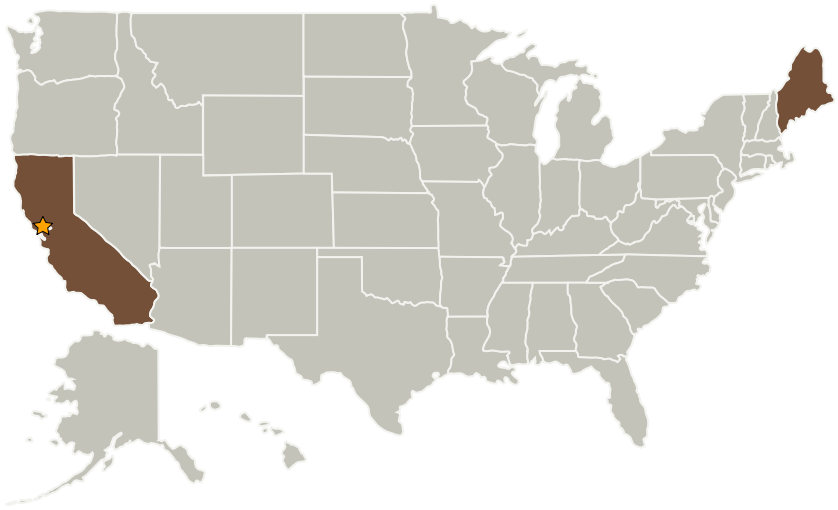
Advanced Thermal Protection Systems (ATPS), Aerospace Grade Carbon Bonded Carbon Fiber Material, Phase I

Completed Technology Project (2005 - 2005)

Project Introduction

Carbon bonded carbon fiber (CBCF) insulating material is the basis for several highly successful NASA developed thermal protection systems (TPS). Among the innovative TPS are Genesis, PICA (phenolic impregnated carbonaceous ablator) currently employed on the Stardust Mission and TUFROC (Toughened Uni-piece Fibrous Reinforced Oxidation-resistant Composite). NASA-Ames has a patent pending concerning TUFROC and the technology is planned for transfer to Boeing for fabrication of the X-37 leading edge. Carbon bonded carbon fiber (CBCF) utilized in the above mentioned TPS is attractive because of its low cost and density, superior thermal performance and compatibility with other components. However, the current CBCF manufacturing processes do not produce materials engineered to the necessary control required of these emerging and highly innovative TPS designs. This program will develop and demonstrate advanced processes and manufacturing approaches to consistently fabricate CBCF insulating material to desired specifications. The benefits derived include significantly improved flexibility for the TPS design engineer as well as more cost efficient CBCF derived TPS fabrication. It will also enable greater availability to this class of superior insulating materials.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Fiber Materials, Inc.	Supporting Organization	Industry	Biddeford, Maine

Primary U.S. Work Locations	
California	Maine

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Keith Meiler

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.3 Thermal Protection Components and Systems
    - TX14.3.1 Thermal Protection Materials